

The opinion in support of the decision being  
entered today is not binding precedent of the Board.

Paper 16

UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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Ex parte BARTLEY D. MAXON  
and MICHAEL S. STARCH

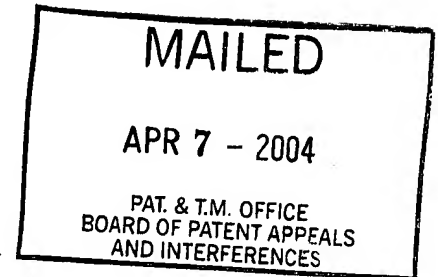
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Appeal No. 2004-0600<sup>1</sup>  
Application No. 10/024,983<sup>2</sup>

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ON BRIEF

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Before: SPIEGEL, LANE and TIERNEY, Administrative Patent Judges.

SPIEGEL, Administrative Patent Judge.

**DECISION ON APPEAL**

This is a decision on appeal under 35 U.S.C. § 134 from the examiner's final rejection of claims 7 through 12, which are all of the claims pending in this application.

**A. Findings of fact (FF)**

The following findings of fact are supported by a preponderance of the evidence.

1. The invention is directed to water-in-oil (W/O) compositions (claims 7-12) "having a discontinuous aqueous phase dispersed in a continuous oil phase. ...[containing] a

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<sup>1</sup> The application on appeal was received by the Board on December 15, 2003.

<sup>2</sup> Application for patent filed December 19, 2001 The real party in interest is the DOW CORNING CORPORATION.

linear silicone polyether, an  $\alpha,\omega$ -diene crosslinked silicone elastomer, and a nonionic organic emulsifier. The W/O emulsion is free of silicone elastomers prepared using unsaturated compounds containing silicon atoms." [Specification, ¶ 7.]

2. Claim 7 is illustrative and reads (paragraphing added):

A composition comprising a water-in-oil (W/O) emulsion having a discontinuous aqueous phase dispersed in a continuous oil phase,

the continuous oil phase of the W/O emulsion comprising

a linear silicone polyether,

the linear silicone polyether having a rake type structure wherein the polyoxyethylene or polyoxyethylene-polyoxypropylene copolymeric units are grafted onto a siloxane backbone, or

the linear silicone polyether having an ABA block copolymeric structure wherein A represents the polyether portion and B represents the siloxane portion of an ABA structure;

a non-emulsifying  $\alpha,\omega$ -diene crosslinked silicone elastomer having no oxyalkylene units in its structure; and

a nonionic organic emulsifier selected from the group consisting of carboxylated alcohol ethoxylates, carboxylated alkylphenol ethoxylates, ethoxylated alcohols, ethoxylated fatty acids, ethoxylated fatty esters, ethoxylated fatty oils, glycerol esters, polyglycerol fatty esters, ethoxylated glycerol esters, sorbitan derivatives, sucrose esters and their derivatives, and glucose esters and their derivatives;

the W/O emulsion being free of silicone elastomers prepared using unsaturated compounds containing silicon atoms.

3. According to the specification (¶ 22),

...the term  *$\alpha,\omega$ -diene crosslinked silicone elastomer* is intended to mean  $\alpha,\omega$ -diene crosslinked silicone elastomers having no oxyalkylene units in their structure. They have been referred to generally in the art as *non-*

*emulsifying* silicone elastomers, meaning that polyoxyalkylene units are absent. Otherwise, the  $\alpha,\omega$ -diene crosslinked silicone elastomers suitable for use according to this invention are the compositions described in US Patent 5,654,362 [i.e., Schulz] (August 5, 1997).

4. The compositions are said to be useful in a variety of personal care products, e.g.,

...antiperspirants, deodorants, skin creams, skin care lotions, moisturizers, facial treatments such as acne or wrinkle removers, personal and facial cleansers, bath oils, perfumes, colognes, sachets, sunscreens, pre-shave and after-shave lotions, liquid soaps, shaving soaps, shaving lathers, hair shampoos, hair conditioners, hair sprays, mousses, permanents, depilatories, cuticle coats, make-ups, color cosmetics, foundations, blushes, lipsticks, lip balms, eyeliners, mascaras, oil removers, color cosmetic removers, and powders (specification, ¶ 48).

The compositions are also said to be useful "as carriers for pharmaceuticals, biocides, herbicides, pesticides, and to incorporate various types of water soluble substances and oil soluble substances into hydrophilic and hydrophobic systems" (*id.*).

Either the discontinuous aqueous phase or the continuous oil phase contains a water soluble active ingredient or oil soluble active ingredient, respectively (specification, ¶ 8).

5. Water soluble active ingredients include vitamins B<sub>1</sub>, B<sub>2</sub>, B<sub>6</sub>, B<sub>12</sub>, niacin, folic acid, biotin and pantothenic acid (specification, ¶ 32).

6. Oil soluble active ingredients include vitamin E, tocopherol, esters of vitamin E,  $\alpha$ -tocopherol,  $\beta$ -tocopherol,  $\gamma$ -tocopherol,  $\Delta$ -tocopherol, tocophersolan, tocopheryl acetate, tocopheryl palmitate, tocopheryl linoleate, tocopheryl nicotinate, tocopheryl succinate and mixtures thereof (specification, ¶ 33).

7. Active forms of vitamin E, i.e., tocopherol, are said to exhibit signs of degradation and instability in prior art W/O systems (specification, ¶ 4).

8. The composition of claim 8/7 contains a water soluble or oil soluble active ingredient in either the discontinuous aqueous phase or the continuous oil phase, respectively.

9. The composition of claim 9/8/7 limits the active ingredient to one selected from vitamin B<sub>1</sub>, vitamin B<sub>2</sub>, vitamin B<sub>6</sub>, vitamin B<sub>12</sub>, niacin, folic acid, biotin, pantothenic acid, vitamin E, tocopherol,  $\alpha$ -tocopherol,  $\beta$ -tocopherol,  $\gamma$ -tocopherol,  $\Delta$ -tocopherol, tocophersolan, tocopheryl acetate, tocopheryl palmitate, tocopheryl linoleate, tocopheryl nicotinate, tocopheryl succinate, and mixtures thereof.

10. The composition of claim 10/7 comprises a continuous oil phase having 0.2-3.0 wt.% linear silicone polyether, 0.2-10 wt.%  $\alpha,\omega$ -diene crosslinked silicone elastomer, and 0.1-4.0 wt.% nonionic organic emulsifier, the balance of the W/O emulsion containing a solvent and water.

11. The composition of claim 11/10/7 limits the solvent to a volatile cyclic alkyl siloxane with the formula  $(R'''_2SiO)_d$  or a volatile linear alkyl siloxane with the formula  $R'''_3SiO(R'''_2SiO)_eSiR'''_3$  in which R''' is an alkyl group containing 1-6 carbon atoms, d is 3-6 and e is 0-5.

12. More specifically, the composition of claim 12/11/10/7 limits the solvent to hexamethylcyclotrisiloxane, octamethylcyclotetrasiloxane, decamethylcyclopentasiloxane, dedecamethylcyclohexasiloxane, hexamethyldisiloxane, octamethyltrisiloxane, decamethyltetrasiloxane, dodecamethylpentasiloxane, tetradecamethylhexasiloxane and hexadecamethylheptasiloxane.

13. We make reference to (a) the Office action finally rejecting claims 7-12 ("Final Rejection"), Paper 8, mailed October 1, 2002, (b) the Examiner's Answer ("Answer"), Paper 11, mailed December 31, 2002, and (c) Appellant's Brief Under 37 CFR § 1.192(a) ("Brief"), Paper 10, filed October 15, 2002.

14. The examiner relies on the following references as evidence of obviousness:

Schilling, Jr. et al. (Schilling)	4,150,048	April 17, 1979
Schulz, Jr. et al. (Schulz)	5,654,362	August 5, 1997
Zhang	5,889,108	March 30, 1999
Lin et al. (Lin)	6,207,717	March 27, 2001

REMINGTON'S PHARMACEUTICAL SCIENCES, 18th ed., A. Gennaro et al. (eds.), 1990, p. 1314 (Remington).

Other findings of fact follow below.

## **B. Issues**

### **1. the rejection**

15. The examiner has rejected claims 7-12 under 35 U.S.C. § 103(a) as being obvious over Lin in view of Schilling, Schulz, Remington and Zhang (Final Rejection, p. 2; Answer, p. 3).

16. As a preliminary matter, we note that claims 7-12 stand or fall together with respect to the rejection under 35 U.S.C. § 103 (brief, page 3). Thus, we direct our attention to claim 7. See 37 C.F.R. § 1.192(c)(5)(1993).

2. the prior art

- a. the primary reference, Lin, differs in not reciting the claimed (a) linear silicone polyether, (b)  $\alpha,\omega$ -diene crosslinked silicone elastomer having no oxyalkylene units in its structure, (c) nonionic organic emulsifier, and (d) solvent

17. Lin describes W/O emulsions containing oil soluble vitamins, e.g., vitamins A and E, entrapped in an elastomeric silicone **polyether**, which emulsions are useful in skin and cosmetic compositions (abstract; c. 1, ll. 36-60).

18. According to Lin, "effective vitamin delivery can only be accomplished by using an elastomeric silicone **polyether containing 4-30 [ethylene oxide] (EO) units in its molecule**" (c. 1, ll. 54-58, emphasis added).

19. Thus, Lin differs from the claimed invention in not reciting

(a) the claimed linear silicone polyether (claim 7) in the amount of 0.2-3.0 wt.% (claim 10), (b) the claimed  $\alpha,\omega$ -diene crosslinked silicone elastomer having no oxyalkylene units in its structure (claim 7) in the amount of 0.1-4.0 wt.% (claim 10), (c) a nonionic organic emulsifier (claim 7) in the amount of 0.1-4.0 wt.% (claim 10), and (d) a solvent (claim 10), e.g., a volatile cyclic alkyl siloxane or a volatile linear alkyl siloxane of defined formulae (claims 10-12).

- b. the secondary reference, Schilling, describes the claimed linear silicone polyether

20. Schilling describes linear or branched (c. 6, ll. 17-19) "siloxane-ether block copolymers" (c. 6, ll. 7-14), including ABA block copolymers (c. 6, ll. 29-34).

21. According to the examiner, "Schilling ... teaches a linear silicone polyether, with

polyoxyethylene or polyoxyethylene copolymeric units grafted onto a silicone backbone, ... (See ... col. 6, lines 2 - col. 7, line 32...) (Final Rejection, p. 3, ¶ 2).

The examiner's position appears to be that Schilling describes the "rake type" linear silicone polyether ("SPE") alternative recited in claim 7.<sup>3</sup>

22. According to Schilling, the described linear silicone polyether copolymers "are particularly useful as surfactants and foam stabilizers for the production of polyurethane foams" (abstract) (see also c. 1, ll. 13-15). Further according to Schilling, the SPE copolymers "can be used in water systems as wetting agents, thickeners, and emulsifiers", e.g., "in aerosol shaving cream formulations" (c. 5, l. 67 - c. 6, l. 3). Still further according to Schilling, "[t]hese copolymers perform very well in water systems because they are nonhydrolyzable" (c. 12, ll. 30-32).

23. Schilling suggests substituting its SPE copolymers for, and in the same amounts as, hydrolyzable SPE foam components used in prior art compositions, e.g., about 0.5 wt.% to about 2.0 wt.% in typical urethane foam compositions (¶¶ bridging ccs. 12-13).

24. The examiner has not pointed out, and we do not find, where Schilling discusses W/O emulsions containing oil soluble vitamins.

**c. the secondary reference, Schulz, describes the claimed  $\alpha,\omega$ -diene crosslinked silicone elastomer having no oxyalkylene units in its structure**

25. The involved specification (¶¶ 22-23) expressly cites Schulz as describing  $\alpha,\omega$ -diene crosslinked silicone elastomers suitable for use in appellants' claimed invention.

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<sup>3</sup> The record does not define a "linear silicone polyether having a rake type structure". Appellants do not dispute the examiner's interpretation of Schilling.

26. Schulz describes  $\alpha,\omega$ -diene crosslinked silicone elastomers "prepared by a crosslinking reaction between (A)  $\equiv\text{Si}-\text{H}$  containing polysiloxanes and (B) an alpha, omega-diene in the presence of a platinum catalyst and (C) a low molecular weight linear or cyclic polysiloxane" (c. 2, ll. 2-7), i.e., without oxyalkylene units in their structure.

27. According to Schulz, these  $\alpha,\omega$ -diene crosslinked silicone elastomers can be swollen into silicone gels, pastes or powders (c. 1, ll. 15-7; c. 2, ll. 12-21) for use (a) in a variety of personal care products, e.g., antiperspirants and deodorants, skin creams, facial treatments, shaving lotions, soaps, shampoos, cosmetics, and "as delivery systems for oil and water soluble substances such as vitamins" (c. 7, ll. 40-58), and (b) beyond the personal care arena, e.g., as electrical cable filler or insulation or as a carrier for pharmaceuticals, biocides, herbicides, pesticides, and other biologically active substances (c. 7, l. 66 - c. 8, l. 18).

28. Further according to Schulz, pastes formed from these  $\alpha,\omega$ -diene crosslinked silicone elastomer "have excellent properties including clarity, thixotropy, shear thinning, and spread smoothly on the skin", while powders are said to have "the unique property of being easily rubbed-in on the skin" (c. 2, ll. 11-19). Still further according to Schulz, "[t]hese materials are ideal for use in solid cosmetics such as antiperspirants and deodorants" (c. 2, ll. 20-21).

29. An antiperspirant formulation described in Schulz Example 3, Table I (c. 6), is



said to contain 70 parts powdered elastomer, i.e., to contain 70 wt.%.<sup>4</sup>

Notably, Schulz's  $\alpha,\omega$ -diene crosslinked silicone elastomers do not contain any oxyalkylene units in their structure, whereas Lin expressly states that "effective vitamin delivery can only be accomplished by using an elastomeric silicone polyether containing 4-30 [ethylene oxide] (EO) units in its molecule" (FF 17).

**d. the secondary reference, Remington, describes the claimed nonionic organic emulsifier**

30. According to Remington, nonionic surfactants derived from sorbitan, e.g., polysorbate 20, "are very useful as emulsifying agents forming **O/W** emulsions in pharmaceuticals, cosmetics and other types of products" (p. 1314, c. 2, ¶ 4, emphasis added).

Notably, Remington's nonionic surfactant is used in an O/W emulsion, not a W/O emulsion as described by Lin.

**e. the secondary reference, Zhang, describes the claimed solvent**

31. Zhang describes "making a silicone elastomer by combining and reacting in one pot (A)  $\equiv\text{Si}-\text{H}$  containing polysiloxane; (B) a mono-alkenyl polyether; (C) an unsaturated hydrocarbon such as an alpha, omega-diene; (D) a solvent; and (E) a platinum catalyst until a silicone elastomer is formed" (c. 1, ll. 49-55).

32. Solvents exemplified by Zhang include (i) linear volatile methyl siloxanes, e.g., hexamethyldisiloxane, octamethyltrisiloxane, decamethyltetrasiloxane,

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<sup>4</sup> According to the examiner, "Schulz ... teaches the weight percent of  $\alpha,\omega$ -diene crosslinked silicone elastomer to be about 7.8% (See particularly col. 6, lines 42-65, Example III)" (Final Rejection, p. 3, last ¶). It is unclear how the examiner arrived at the alleged wt.%.

dodecamethylpentasiloxane, and hexadecamethylheptasiloxane, and (ii) cyclic volatile methyl siloxanes, e.g., hexamethylcyclotrisiloxane, octamethylcyclotetrasiloxane, decamethylcyclopentasiloxane and dodecamethylcyclohexasiloxane (c. 4, ll. 24-47; c. 5, ll. 17-27).

33. Zhang's silicone elastomers can be used to form pastes said to "have excellent spreadability upon rubbing, and possess unique rheological properties in being thixotropic and shear thinning" and which are said to be "easily emulsified with water ... without using a surfactant..." (abstract).

34. Similar to pastes formed from Schulz's  $\alpha,\omega$ -diene crosslinked silicone elastomer, Zhang's pastes are also useful in a variety of personal care products, e.g., antiperspirants and deodorants, skin creams, facial treatments, shaving lotions, soaps, shampoos, cosmetics, and "as delivery systems for oil and water soluble substances such as vitamins" (c. 7, ll. 12-30), and beyond the personal care arena, e.g., as electrical cable filler or insulation or as a carrier for pharmaceuticals, biocides, herbicides, pesticides, and other biologically active substances (c. 7, ll. 35-55).

### **3. the examiner's position**

35. In essence, the examiner's position is that

it would have been obvious to one of ordinary skill in the art to modify the W/O emulsions of Lin containing oil soluble vitamins, e.g., vitamins A and E, entrapped in an elastomeric silicone polyether, by incorporating therein (i) the claimed linear silicone polymer (Schilling), (ii) the claimed nonionic organic emulsifier (Remington) and (iii) the claimed solvent (Zhang), and by (iv) substituting the claimed  $\alpha,\omega$ -diene crosslinked

silicone elastomer having no oxyalkylene units in its structure (Schulz),

because (i) incorporation of the linear silicone polymer of Schilling would provide emulsifying activity to form the W/O emulsion, (ii) incorporation of the nonionic organic emulsifier of Remington would be considered as adding a second surfactant to stabilize the emulsion, (iii) incorporation of the solvent of Zhang would make the W/O emulsion emulsified more easily and (iv) substitution of Schulz's  $\alpha,\omega$ -diene crosslinked silicone elastomer having no oxyalkylene units in its structure would improve the lubrication of the formulation when applied onto the skin (Final Rejection, pp. 4-5).

36. The examiner further maintains that the skilled artisan would have reasonably expected to incorporate the claimed ingredients into the W/O emulsion of Lin "given the cited prior art ... absent evidence to the contrary" (Final Rejection, p. 5, ¶ 2).

### **C. Discussion**

A showing of obviousness requires a motivation or suggestion to combine or modify prior art references, coupled with a reasonable expectation of success. Brown & Williamson Tobacco Corp. v. Philip Morris Inc., 229 F.3d 1120, 1124-25, 56 USPQ2d 1456, 1459 (Fed. Cir. 2000). Obviousness cannot be established by hindsight combination to produce the claimed invention. In re Gorman, 933 F.2d 982, 986, 18 USPQ2d 1885, 1888 (Fed. Cir. 1991). As discussed in Interconnect Planning Corp. v. Feil, 774 F.2d 1132, 1143, 227 USPQ 543, 551 (Fed. Cir. 1985), it is the prior art itself, and not the applicant's achievement, that must establish the obviousness of the combination.

Here, the examiner has not explained why one of ordinary skill in the art would have been motivated to replace the elastomeric silicone polymer in Lin's W/O emulsion containing oil soluble vitamins with an elastomeric silicone polymer which does not contain any oxyalkylene units. Lin expressly states that effective vitamin delivery can only be accomplished by using an elastomeric silicone polymer containing 4-30 oxyalkylene (i.e., ethylene oxide) units in its structure (c. 1, ll. 54-58). Even assuming arguendo that Schulz's silicone elastomer having no oxyalkylene units in its structure would provide improved lubrication of a W/O emulsion containing oil soluble vitamins (see Answer, p. 4, ¶ 2), the examiner has failed to explain why the skilled artisan would have reasonably believed that Lin's W/O emulsion would have been able to deliver its oil soluble vitamins effectively with an elastomeric silicone polymer which does not contain any oxyalkylene units in its structure. These reasons alone are a sufficient basis on which to reverse the decision of the examiner to reject claims 7-12.<sup>5</sup>

In addition, as noted by appellants (Brief, p. 6, ¶ 2), Remington discusses the usefulness of nonionic organic surfactants in O/W emulsions, whereas the emulsion of Lin is a W/O emulsion. There is no apparent reason, on this record, to use a nonionic organic surfactant in Lin's emulsion. The examiner's argument that either type of emulsion consists of water, oil and a surfactant and that optimizing the amount of oil

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<sup>5</sup> The claim language "the W/O emulsion being free of silicone elastomers prepared using unsaturated compounds containing silicon atoms" does not appear to preclude the presence of Lin's elastomers. (The record is not clear on this point.) Assuming arguendo that the examiner's rejection was, in relevant part, that it would have been obvious to add (rather than substitute) the silicone of elastomer of Schulz to the emulsion of Lin, the examiner would still have to explain why one of ordinary skill in the art would have been motivated to add a second elastomer to Lin's emulsion, especially one that did not provide effective vitamin delivery. The examiner would also have to explain why one of ordinary skill in the art would have used a nonionic surfactant in Lin's emulsion.

versus the amount of water "would be considered obvious as being within the purview of skilled artisan" (Answer, p. 4, ¶ 3) neither answers appellants' argument nor acknowledges that a specific type of surfactant, i.e., a nonionic organic surfactant, is being claimed. The examiner has not satisfied his initial burden of setting forth a prima facie case of obviousness. The examiner has failed to direct our attention to any convincing evidence that one of ordinary skill in the art would have reasonably expected a nonionic organic surfactant known to work in an oil-in-water emulsion to work in a water-in-oil emulsion, as well. Here, at best, a skilled artisan might find it obvious to try a nonionic organic surfactant in a W/O based on the disclosure of Remington, but that is not the standard of 35 U.S.C. § 103. In re Goodwin, 576 F.2d 375, 377, 198 USPQ 1, 3 (CCPA 1978).

For these reasons, the examiner's rejection of claims 7-12 is reversed.

To summarize, the decision of the examiner to reject claims 7-12 under 35 U.S.C. § 103(a) as being obvious over Lin in view of Schilling, Schulz, Remington and Zhang is reversed.

Carol A. Spiegel  
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Administrative Patent Judge

  
SALLY GARDNER-LANE  
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